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HISTORICAL FUND
of the
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute, please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

Treasurer, N. M. D. Historical Fund
Bureau of Medicine and Surgery (Code 14)
Department of the Navy
Washington 25, D. C.

DENTAL SECTION

Committee

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Medical Problems of Modern Warfare
and Civil Disaster

For many generations, the medical profession and the allied medical sciences have been involved in the seemingly endless task of dealing with man's adaptation to the environment in which he lives. In the past, the environment has consisted in the main of natural forces, such as climate, food, water, shelter, protective clothing, reproduction of the species, and a liberal admixture of worship and fear. Now, with the advent of industrialization of so many parts of the world, new forces in the production of traumatic injury to man, including the onslaughts of biological effects, have been encountered. Radiation energy, a force having phenomenal biological and physiological implications, was destined to have a profound effect, not only on the lives of men, but on all mankind and his environment as well.

On December 2, 1942, Fermi and co-workers produced the first self-sustained nuclear chain reaction by employing a highly fissionable material. Just a few years later, this nuclear reactor became a weapon of war and the terrific energies produced were added to man's environment. With the manufacture of this weapon in sufficient quantities to produce a devastating effect in man's environment, the medical profession and allied science specialists of the world were charged with the responsibilities of developing accurate knowledge of the biological and kinetic effects of this energy, and of assisting in plans, logistics, and training programs for the care of staggering numbers of human casualties which could be expected in the event of atomic or thermonuclear attack.

Not only was the military interested in this colossal problem and challenge, but the term, "civil defense," became a byword as non-combatants were no longer immune to the devastating effects of these nuclear weapons.

The collective efforts of highly qualified and carefully selected scientists in the field of nuclear research have been channeled through top level committees of the nation for evaluation and coordination of the total efforts. Some are: (1) The Division of Biology and Medicine of the United States Atomic Energy Commission, (2) The Committee on Genetic and Somatic Effects of the National Academy of Sciences of the National Research Council, and (3) the National Committee on Radiation Protection centered at the National Bureau of Standards, Washington, D. C.

Recent developments in ABC or thermonuclear, biological, and chemical warfare, the use of nuclear power, and radioactive isotopes have accentuated the problems in medical defense and radiation protection and, in certain instances, have created new ones. The Special Weapons Defense Division of the Bureau of Medicine and Surgery of the Navy Department has the responsibility for recommending policy and for furnishing guidance concerning these problems to the Surgeon General and, thus, to the Medical Department at large.

One of the most difficult aspects of planning for ABC warfare medical defense and radiation protection is a delineation of responsibilities of the Medical Department. This, of necessity, requires a thorough knowledge of the medical aspects of the problems in relation to the over-all problems.

The areas of responsibility of the Bureau of Medicine and Surgery as outlined in OpNav Instruction 2440.3 are to:

1. Develop procedures and develop, procure, and distribute equipment and materials for the treatment of mass casualties resulting from atomic, biological, and chemical warfare attacks.
2. Advise agencies responsible for the provision of protection, decontamination, and detection devices as to medical aspects involved in their operation or development.
3. Develop techniques and develop, procure, and distribute devices for the rapid identification of biological warfare agents.
4. Investigate and develop means of increasing the resistance of individuals to the effects of atomic, biological, and chemical warfare agents.
5. Establish tolerance and regulations for radiation and provide information on physiological effects of exceeding such tolerances by varying amounts.
6. Train medical and paramedical personnel as required; develop adequate atomic, biological, and chemical warfare defense concepts and realistic techniques.
7. Indoctrinate all hands in the elements of "buddy aid," self aid, and first aid.

The United States Navy Passive Defense Manual outlines defense planning responsibilities, organization, general concepts of passive defense operations, relation to civil defense, the make-up and function of standard passive defense teams and a compilation of laws, executive orders, and regulations pertaining to domestic emergencies, passive defense, civil defense, and related problems.

The instructions indicate the areas of management, technical, and operational responsibilities which must be considered in the preparation and implementation of local passive defense bills. To assist in preparation and interpretation of the instructions by the Special Weapons Defense Division of the Bureau of Medicine and Surgery, progress has been made with regard to a delineation of the Medical Department's technical and operational responsibilities within the over-all passive defense organization. The primary responsibilities of the Medical Department which are involved in this delineation are:

1. Advisory.
2. Prophylaxis and therapy (prophylaxis mainly applicable to biological warfare defense.)

3. Instruction in self aid and first aid which has been standardized on a Navy-wide basis (mainly applicable to atomic warfare and chemical warfare).
4. Mass casualty handling and evacuation.
5. Epidemiological countermeasures in biological warfare including epidemic intelligence in recognition of a biological warfare attack.
6. Training of medical and paramedical personnel.
7. Indoctrination of all personnel in the medical aspects of ABC warfare.
8. Decontamination of actual casualties (not of other personnel).
9. Detection of ABC contamination in certification of food and water for consumption (not in the general environment).
10. Identification of biological warfare agents.
11. Recording and accountability for personnel exposed to ionizing radiation.

The responsibilities of the Medical Department in various situations are considered; first, the duties of the Medical Department in a nonmedical command, such as ship or station. The pre-attack duties logically come first and among these, in addition to advisory functions, are planning, indoctrination of all hands in the medical aspects of atomic, biological, and chemical warfare defense, prophylactic procedures in prevention of biological warfare casualties, and thorough teaching of first aid, self aid, and "buddy aid" to all personnel. These pre-attack duties are closely tied together. Planning means, in part, preparing a medical annex to the passive defense bill of the ship or station. The Medical officer needs adequate training if he is to fulfill his duties in ABC warfare defense. The courses now given in this subject at the Naval Schools Command, Treasure Island, Calif., and other Naval and Army facilities are stressing planning concepts that will be helpful at all operational levels.

Among the clearly delineated post-attack duties of the Medical Department are: triage (sorting of casualties); treatment of casualties including post-exposure prophylactic procedures; decontamination of casualties (but not decontamination of non-casualties); advisory capacity function concerning decontamination of non-casualties and water and food supply control; evaluation of potential casualties, such as asymptomatic radiation exposures, biological warfare exposures, if known, and personnel exposed to war gases having a latent period.

Post-attack duties include several functions which need clarification. The decontamination of personnel (with the exception of actual casualties) is not the responsibility of the Medical Department. Actually, the only decontamination that is the responsibility of the Medical Department is the decontamination of casualties, and this for the obvious reason that a severely wounded man must come to the Medical Department for treatment as soon as possible. Decontamination, in general, of personnel as well as of material,

is the responsibility of the damage control department on shipboard and the responsibility of similar nonmedical personnel ashore. The rationale for not assigning this responsibility to the Medical Department is that the Medical Department, at the time of enemy attack, will be overloaded with purely medical duties and must not be saddled with additional responsibilities.

Another duty about which confusion appears to exist in regard to responsibility is in the detection and identification of biological warfare agents. Consistent with their responsibilities, the development of physical devices for rapid detection of biological warfare agents is the responsibility of the Bureau of Ships afloat, and the Bureau of Yards and Docks ashore. These devices are intended to reveal the presence of viable, airborne, pathogenic agents, and their use is regarded as a warning procedure. Their continued development and operation will be the responsibility of nonmedical personnel as are other types of warning devices. Biological methods of detection and identification shall be accomplished by nonmedical personnel.

Since the strictly biological identification procedures are a clear-cut responsibility of Medical Department personnel, the operation of sampling devices, both present and future, should be at least under the advisory supervision, but not necessarily the control, of the Medical Department.

Detection of ABC contamination of food and water and identification of the BW and CW agents therein are Medical Department responsibilities in which sampling may of necessity have to be done by nonmedical personnel under general medical supervision because of the press of other duties. Identification of the BW agents, because of the techniques involved, can only be done by medical personnel and the final certification of the safety of the food and water can only be made by the Medical Department. Treatment of water and food to make them safe for consumption is not a Medical Department responsibility, but close collaboration with medical personnel will be necessary in order to obtain Medical Department certification.

The advent of the atomic and thermonuclear-type weapons has necessitated many changes in the concept of modern warfare. If the Medical Department is to assume its traditional role in the next conflict, it must prepare now to render service in the face of weapons of far greater destructive power than was exhibited by the bombs which fell on Hiroshima and Nagasaki. Very little imagination is needed to transpose such a scene to any United States military or naval base.

The attack will not come on a predetermined D-day—rather, it will be at the enemy's convenience. There will be no time to mobilize or formulate plans during the initial attack and, since the targets of these weapons are expected to sustain large numbers of casualties, the role of the Medical Department will be more important than ever. Germany's experience during World War II emphasized the fact that medical services must play a primary role in the initial phase of any recovery plan, for morale purposes if for no other reason.

Recognizing the importance of ABC defense training programs, the Bureau of Medicine and Surgery, in 1948, directed the Naval Medical School of the National Naval Medical Center, Bethesda, Md., to prepare a five-day course in the medical aspects of special weapons. This course was enthusiastically received and has been repeated from one to four times each year. In 1953, the course was extended to two weeks. The present course is an intensive review of the medical problems associated with nuclear, biological, and chemical warfare; it includes an introduction to nuclear physics, weapons systems, the problems of space medicine, the management of mass casualties, civil defense, and military stress patterns. The March 1958 presentation reemphasizes the employment and capabilities of strictly conventional weapons.

For several years, Medical officers have participated in the Line Atomic, Biological, and Chemical Defense Course. In January 1958, a four weeks' course in ABC warfare defense was organized for Medical officers and will be given twice each year. Special weapons orientation courses are also available at various activities.

In the Center for biological warfare training, Medical Department officers are assigned to the research program. In chemical warfare training programs, Medical Service Corps officers are on the teaching staffs. The Bureau of Medicine and Surgery has regularly filled the available billets in the one week courses in the Management of Mass Casualties.

Atomic propulsion has created a priority requirement for nuclear trained submarine Medical officers. These officers receive basic submarine medical training over a period of six months. They are then ordered to a submarine squadron for six months' operational experience; next, they are assigned for an academic year of training in radiobiology leading to a Master of Science degree. Subsequently, each officer is ordered to a reactor site for engineering indoctrination for periods varying from three months to one year. These officers are then ordered to their respective nuclear powered submarines prior to the installation of the reactor core.

In September 1958, the Naval Medical School initiated a course for Nurse Corps officers in clinical isotope techniques with emphasis on the nursing care of patients under study with isotopes and the management of nuclear casualties. It is the intention of the Bureau to train a sufficient number of Nurse Corps officers to permit assignment of one graduate to each of the larger naval hospitals.

Correspondence courses prepared and administered by the Naval Medical School are available to regular and reserve officers of the three services. Courses in atomic medicine and the treatment of chemical warfare casualties are extremely popular. New courses in radioisotope techniques . . . in atomic, biological, and chemical defense . . . and the management of mass casualties have been prepared.

For the training of medical support personnel, the Naval Medical School publishes a variety of manuals designed as laboratory and field guides. Within

the past two years, three new manuals have been prepared and four have been completely revised. A new x-ray manual is in press and a new radioactive isotope therapy technicians' manual has been completed. It is the policy of the Naval Medical School to make these manuals available without cost to the military services, the public health service, civilian physicians, medical students, and technicians.

In December 1957, the Secretary of the Navy directed that the teaching of self help and first aid be "augmented, modernized, and standardized" on a navy-wide basis. This navy-wide training program is based on the philosophy that first things come first; training is first at every level and, for an effective passive defense plan, first aid and self help training is unquestionably first.

The Navy Medical Department, in common with the medical services of the Army and the Air Force, recognizes its debt to its Reserve Medical officers. World War II and the Korean conflict brought many back to active duty where their skills in the various specialties contributed immeasurably to the fine record made in conserving life and health in the Armed Forces. The excellent way in which they performed, their fine devotion to duty and to humanity in general will always be a lasting tribute to military medicine, to the nation, and to themselves.

The importance of the Reserve Medical officer is fully recognized and is no less now than in the past. As a matter of fact, the need for the Reserve has perhaps never been greater than it is now because of the part he will be called upon to play if nuclear warfare is ever loosed upon the world.

Yearly, the race for weapons supremacy proceeds unabated. The weapons are designed for total warfare, the characteristics of which have never been experienced and can only be imagined. Survival will become of primary importance—not only national survival, but racial survival. To survive in this country, there must be medical pre-planning. That is why Reserve Medical officers are more important now than ever before. Their training in organization, logistics, and combat experience will be invaluable qualifications.

The author urges all who belong to organized units to take an active part in the medical preparedness planning for disaster in their communities. Reserve units so engaged have effected excellent liaison with all Armed Forces within their areas and have added to the strength and security of planning which must be between civilian and Armed Forces to effect an adequate program for the nation.

The more tangible needs for the Reserve Medical officer is in medical disaster planning for local disasters in his community. The Bureau of Medicine and Surgery is cognizant of the capacity. It is urged that those who have not participated enter this field of community service for which the Armed Forces have prepared them. In this way, another link to the chain that affects the defense and security of the nation can be forged. (RADM B. W. Hogan MC USN, The Surgeon General, Medical Problems

of Modern Warfare and Civil Disaster: 12th Naval District Symposium, June 1958-Introduction to the Problems, J. Arizona M. A., 16: 109-115, February '59)

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Ectopic Pregnancy

Fifty consecutive cases of ectopic pregnancy, 48 tubal and 2 ovarian, observed at Tripler U. S. Army Hospital during 1956 and 1957 are presented. An attempt is made to correlate the several diagnostic procedures with accuracy in reaching the diagnosis and to emphasize the pitfalls along the way to correct definitive treatment. It is believed that an analysis of all patients in whom the diagnosis was entertained at initial examination, and of all in whom the diagnosis was not suspected but proved after further observation, is of value. These cases occurred in dependents of military personnel and were handled completely by the resident and teaching staff of a large military hospital.

Ectopic pregnancy is by definition any pregnancy which occurs outside the uterine cavity where implantation of a fertilized ovum would ordinarily take place. This includes a pregnancy in the uterine cornu, the cervix, the Fallopian tube, or outside the Fallopian tube in the abdominal cavity, the ovary, or the cul-de-sac. The most common site for an ectopic pregnancy is in the Fallopian tube. Consequently, ectopic pregnancy is usually associated with, or thought of, as a tubal pregnancy.

In this series there were 48 tubal pregnancies and 2 pregnancies in the ovary, all of which were proved by histologic examination. The 2 ovarian pregnancies, however, did not fulfill the criteria set forth by Spiegelberg. In each instance, both tubes appeared normal at the time of laparotomy and were not removed. The etiology of the bleeding was felt to be a ruptured corpus luteum cyst which was resected. Both of the surgical specimens, however, at the time of histologic examination were found to contain trophoblastic villi within the substance of the ovary.

The diagnosis of ectopic pregnancy depends a great deal on the history and physical examination. Three outstanding signs or symptoms were present in the history of these patients: (1) abdominal pain, (2) vaginal bleeding either before or at the time of admission, and (3) a period of amenorrhea. Forty-nine patients had as their chief complaint abdominal pain, either generalized or localized. The only other patient was admitted for an elective laparotomy for pelvic inflammatory disease and was found to have an incidental ectopic pregnancy as well. A history of vaginal spotting either prior to, or at the time of, admission was significant. Forty-five patients had a period of amenorrhea exceeding 4 weeks and in most cases some form of abnormal menstrual history. The abdominal pain in most cases was rather severe. Although most patients complained of generalized lower abdominal pain, 28

could localize the pain to either the right or left lower quadrant. Of the 38 patients with vaginal bleeding, only 15 were found to have bleeding on admission, while 22 patients had had vaginal bleeding one or more times prior to admission. In most cases, this bleeding was described as small in amount, definitely different from that of a normal menstrual period.

A history of amenorrhea was present in 90% of this series. There were only 5 patients who did not have a period of amenorrhea of at least 4 weeks. The average length of amenorrhea in the entire series was 6 weeks.

All patients in this series except the one with the incidental ectopic pregnancy were found to have abdominal tenderness on physical examination. Thirty-seven patients had definite rebound tenderness indicative of peritoneal irritation. Associated with the rebound tenderness, but to a lesser degree, were the findings of abdominal rigidity and abdominal distention. As expected, the pelvic findings were most significant. The cervix was visualized in all patients. Over one-half had a positive Chadwick's or Hegar's sign and an equal percentage had a tender uterus, especially on motion of the cervix. Only 15 patients had a definitely enlarged uterus which might lead one to suspect an intrauterine pregnancy rather than an ectopic gestation. On bimanual examination, however, two-thirds of the patients had a definite palpable adnexal mass, tenderness of the cul-de-sac, or cul-de-sac fullness. One or more of these findings are significant in making the diagnosis of ectopic pregnancy.

Shock or impending shock (rapid pulse and pallor) was found relatively infrequently in this series. Only 10 patients presented with clinical shock while an additional 21 were found to be quite pale from blood loss either chronic or acute. This was slightly unusual in view of the fact that 74% of the patients were found at the time of operation to have a ruptured tubal pregnancy. The average blood loss for this series was likewise approximately 700 cc. per patient.

The treatment of ectopic pregnancy is surgical. Excision of the affected tube or pregnancy site with preservation of as much functioning tissue as possible, especially the ovary, is important. This is usually an emergency procedure and should be performed as quickly as possible and without additional elective surgery. In the face of gross bleeding, it is poor technique to undertake an appendectomy or removal of an infected salpinx from the opposite side for fear of peritoneal spill in the face of an excellent culture medium. Once the diagnosis of ectopic pregnancy is made or there is a strong suspicion of it, the surgical treatment should be carried out through a laparotomy incision.

The authors believe that transfusion is second only to operation in reducing maternal morbidity and mortality. After a study of the charts of all patients in this series, the calculated average blood loss was found to be approximately 650 to 700 cc. Blood transfusions were accurately recorded in all cases and the average blood replacement for the entire series was

850 - 900 cc. of blood. Thirty patients, or well over half of the series, required at least 500 - 1000 cc. of blood. Twenty-six patients, or over 50%, received 1000 cc. or more of whole blood. Blood was given in all cases by the intravenous route. In many cases, this was given at a rapid rate under pressure. In none of the cases was it felt necessary to give intra-arterial transfusion. Of the 8 patients who required no blood replacement, 3 had unruptured tubal pregnancies, 3 underwent operation within 4 hours of admission and were believed to have less than 500 cc. of blood in the abdominal cavity, one was taken to the operating room within 24 hours of admission and was found to have a well-confined rupture within the broad ligament, and one patient was operated on during the third hospital day and found to have a well-localized, but ruptured, tubal pregnancy. All patients who were clinically in shock or had very low hematocrits were started on blood replacement prior to anesthesia. In nearly all cases, blood replacement was given during the operative procedure.

The morbidity is not recorded strictly according to the standard of the American Committee on Maternal Welfare. The patients were divided into two groups: (1) those who at no time during their hospital stay had a temperature elevation above 99° F., and (2) those who had a temperature over 100° F. on one or more days during their hospital stay. Thirty-five patients (70%) fell in the second group. In most cases, the elevation of temperature did not persist for more than 24 to 36 hours and was believed to be due in a large number of cases to a foreign body reaction, absorption of blood from the peritoneal cavity. In this group, there were 2 cases of postoperative pneumonia, 2 urinary tract infections, one case of diarrhea with etiology undetermined, one wound infection, and one mild transfusion reaction. The average hospital stay for the entire series was 8 days. There were 23 patients treated with antibiotics postoperatively. All of the mentioned postoperative complications were treated with antibiotics. The authors do not believe that antibiotics should be used prophylactically in all ectopic pregnancies, but certainly believe that they will reduce the severity of complications when indicated. The antibiotics used in most cases were penicillin and streptomycin unless a specific organism was isolated which was sensitive to a specific antibiotic. Of the 4 patients in whom an incidental appendectomy was done at the time of laparotomy, 2 ran a temperature above 100° F. during the postoperative course. None of the 4 were given antibiotics. Two patients had some difficulty postoperatively with abdominal distention, one of whom required Wangensteen suction for approximately 24 hours. Patients who have a large amount of blood in the abdomen usually develop postoperative ileus no matter how gently the operation is performed or how little the pelvic organs are disturbed.

There was no maternal death. Prior to 1940, the percentage of maternal deaths from ectopic pregnancy has been reported from 3 to as high as 12%. More recently, the mortality rate has dropped to from 1 to 3%. _____
(CAPT F. L. Soisson USAF (MC), CAPT J. P. Moran MC USN, Ectopic

Pregnancy - A Review of Fifty Cases at Tripler U. S. Army Hospital: Am. J. Obst. & Gynec., 77: 352-362, February 1959)

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Acute Granulocytic Leukemia in Pregnancy

Acute leukemia in pregnancy poses a delicate therapeutic problem because the very agents which are ordinarily most effective in antileukemic therapy may seem contraindicated by virtue of their potential deleterious effects on the fetus. Both folic acid antagonists and purine analogs are capable of inducing abortion and developmental anomalies if administered early in gestation. For this reason, and because a major aim of therapy in such cases is generally to secure normal progeny, there is considerable sentiment in favor of the antimetabolites in the management of acute leukemia during pregnancy. In a recent comprehensive review of the subject, it was maintained that corticosteroids are the drugs of choice in acute leukemia during pregnancy with antimetabolites reserved for patients in whom steroid control fails.

Cases in this review are presented chiefly to illustrate that corticosteroids also may have their drawbacks in the therapy of acute granulocytic leukemia in the pregnant patient, and that therapy with an antimetabolite may be carried out with safety and a favorable result.

Interpretation of factors affecting the outcome of a particular case of acute leukemia may be difficult because of the poor prognosis and fatal outcome of all cases. Even with optimal therapy, the median life span of adults with this disease is but 7 months and only 10% of patients live as long as 16 months; it is not surprising that during the 9 months of pregnancy with all its attendant stresses most women with acute leukemia succumb. Yahia, Hyman, and Phillips have tabulated cases reported in the English literature between 1944 and 1956. Of 20 pregnant patients whose acute leukemia appeared in the first or second trimester, only 8, or 40%, were able to survive the pregnancy and most of these patients died shortly thereafter. The median survival time of these 20 patients was about 5 months, a figure which is probably not significantly different from that of nonpregnant patients in the same age group. Thus, there is little effect of pregnancy per se upon acute leukemia, except that few women with the disease are able to survive the normal period of gestation.

One might also inquire as to the effect of the leukemia on the pregnancy. The high maternal mortality is due to the major terminal complications of leukemia, namely infection and hemorrhage. Premature labor is common, and prematurity is a principal cause of the high fetal mortality. Excessive postpartum hemorrhage occurred in 6 of the 32 cases tabulated by Yahia, Hyman, and Phillips. The fetal mortality in their series was 39%.

In view of the dismal outlook for the pregnant woman with acute leukemia, it is understandable that patients with the disease are usually discouraged from becoming pregnant. However, occasionally pregnancy will occur. More commonly, onset of pregnancy antedates the onset of leukemia. In either circumstance, the physician's aims in management may be governed to some extent by social and psychological factors peculiar to each case. Certainly, on purely physical grounds there does not appear to be any justification for therapeutic abortion in most cases. In general, the aim of therapy is to sustain the pregnancy long enough to permit pelvic delivery at term and the birth of a healthy infant. Caesarean section should be reserved for situations in which the mother is moribund or for fetal distress in the presence of a viable gestation.

It appears that in acute granulocytic leukemia in pregnancy, a preference for therapy with corticosteroids rather than 6-mercaptopurine cannot be justified on grounds either of greater safety for the fetus or of greater likelihood of maternal benefit. The authors believe that by virtue of its more fulminating character and more immediately fatal prognosis, acute leukemia provides a different problem in management from certain other hematologic neoplasms. In Hodgkin's disease and in chronic leukemia, prognosis of the pregnancy is usually good and because of the potential harmful effects of cytotoxic agents, their use should be avoided whenever possible. Where therapy is urgently needed, minimum doses required to achieve the desired result should be employed; in almost every such case, therapy can and should be deferred until after the first trimester. In acute leukemia, on the other hand, prognosis is poor and few mothers can sustain a normal pregnancy. If a viable infant is desired, the only hope is to treat the leukemia vigorously with the aim of producing a remission or suppressing the disease for long enough to allow the pregnancy to reach term. At the present time, the agent most likely to achieve this end is probably 6-mercaptopurine.

In the management of acute leukemia in pregnancy, steroids are not necessarily superior to antimetabolites. The best over all therapeutic regimen is that which is most effective against the leukemia itself. (H. Rothberg, M. D., CAPT M. E. Conrad MC USA, LTCOL R. G. Cowley MC USA, Acute Granulocytic Leukemia in Pregnancy - Report of Four Cases with Apparent Acceleration by Prednisone in One: *Am. J. Med. Sci.*, 237: 194-203, February 1959)

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Periureteric Fibrosis

Periureteric fibrosis, an idiopathic retroperitoneal fibrotic process, is a recently recognized disease characterized by unilateral and bilateral ureteral obstruction. This report describes certain clinical and radiographic features observed in four cases of periureteric fibrosis studied at the Massachusetts General Hospital. It is hoped that the observations may facilitate the early diagnosis of this rare syndrome.

Periureteric fibrosis is a progressive process involving the retroperitoneal tissues. Raper suggests that it originates in the region of the great vessels, while Chisholm believes that it takes its origin from the fascia of the psoas muscle. It has been found in a case of periarteritis nodosa. It is known that regional ileitis, appendicitis, and diverticulitis are inflammatory processes capable of producing ureteral obstruction. Chisholm and associates suggested that, in their patients, infection in the retroperitoneal space which encloses the aorta, inferior vena cava, and the urinary tracts, could produce the fibrotic changes. In many reported cases, however, evidence of inflammation is absent. Whatever its origin may be, it is known that the fibrotic process extends from the kidneys to the sacral promontory, spreading laterally to involve one or both ureters.

The cut surface of the fibrotic lesion is grayish-white, its appearance being similar to that of metastatic carcinoma or lymphoma. Microscopically, the process shows an actively sclerosing type of inflammatory fibrosis infiltrated with monocytes, lymphocytes, and some eosinophils. Culture for organisms is negative.

A good history is usually the key to the diagnosis of any disease. Periureteric fibrosis is no exception. Pain, initially vague in character, is the chief presenting symptom. It has been described as an indefinite backache, a gnawing feeling, or a dragging discomfort in the lower quadrants of the abdomen, changing later to a cramp-like pain radiating into the genitalia or thighs. The pain becomes worse on lying down. Sometimes, it is relieved by lying prone or in the "doubled over" position as described by one patient. Usually, slight abnormalities in the urine, occasional red and white blood cells, and slight elevation of the white blood cell count are the only laboratory changes noted. Fever is absent. The patients with anuria present with various signs and symptoms of uremia with abnormalities in the urine and elevation of the serum non-protein nitrogen or urea nitrogen. The physical signs and laboratory tests are unremarkable; nevertheless, they contribute something by their very normality. This is particularly evident in cases of unilateral obstruction.

Plain films of the abdomen—the first step in a radiologic examination—may show disappearance of the normal fat lines which outline the various retroperitoneal structures, notably the psoas and lumbosacral muscle.

This absence of fat planes may assist in identifying a mass of inflammatory tissue obscuring these retroperitoneal structures.

Intravenous urography is the prime radiographic procedure which demonstrates the abnormality in the urinary tracts. There may be delayed excretion of the contrast material, dilatation of the major and minor calyces and/or the kidney pelvis, or complete urinary obstruction on one or both sides. If the obstruction is apparent, the contrast material gradually tapers, demonstrating a local narrowing of the ureter. The actual cause of the obstruction may not be evident. This may best be demonstrated by retrograde urography. Despite the degree of obstruction, a catheter may be passed beyond the point of narrowing, sometimes with remarkable ease. This is not always possible, however. Insertion of the catheter to the point of obstruction and injection of the opaque substance may be the most definitive diagnostic procedure. The ureter above the point of obstruction is dilated, the dilatation ending in a smooth cone-like narrowing, tapering gradually into an irregular isthmus which is fixed in position and whose diameter does not vary. The narrowed segment may be 3 - 4 cm. in length.

The early recognition and diagnosis of ureteral obstruction caused by periureteric fibrosis are most important for surgical relief of the obstruction produced by the insidious creeping of the fibrotic process which may eventually involve both ureters and thereby produce anuria. Retroperitoneal air insufflation may supplement the urographic studies in establishing the presence of retroperitoneal disease. Observation of the peristaltic activity of the ureters by means of fluorography or cinefluorography may contribute to the knowledge of the pathologic physiology of the involved segment of ureter and help explain the apparently paradoxical ease of retrograde catheterization.

The absence of a mechanical obstruction to the passage of a ureteral catheter in the presence of anuria suggests the possibility of retroperitoneal malignant infiltration. To distinguish this from periureteric fibrosis is difficult if not impossible. A nonopaque ureteral calculus or blood clot can produce ureteral obstruction and substantially the same roentgenographic findings.

Various procedures have been used to alleviate the symptoms and signs of ureteral obstruction. Antibiotics with indwelling catheters which were later removed from the ureter engulfed in the fibrotic process have been used with success. Other methods of treatment include ureterolysis and placing the ureter free in the abdominal cavity, bilateral nephrostomies with ureteral dilatation, nephrectomy, and radiation therapy. Ureterolysis is probably the treatment of choice. (Millard, D.G., Wyman, S.M., Periureteric Fibrosis - Radiographic Diagnosis: Radiology, 72: 191-195, February 1959)

Treatment of Scleroderma

Scleroderma or diffuse systemic sclerosis is a challenging disease. Its etiology is not known and its pathogenesis is poorly understood. The clinical and histopathologic features of scleroderma have been repeatedly described and are mentioned only briefly in this review.

Characteristically, there is cutaneous involvement, usually ushered in by an acute edematous phase followed by induration and atrophy. Raynaud's phenomenon may precede, accompany, or, rarely, follow the onset of objective skin change. Pain and stiffness of joints and myalgias are not uncommon. Although the changes in the skin may dominate the clinical picture, it is now well known that no system is immune. Diffuse sclerosis may proceed throughout the body wherever there is tissue of mesenchymal origin. Thus, changes may be induced not only in subcutaneous structures, but also in the various muscles, blood vessel walls, esophagus and gastrointestinal tract, the lungs, heart, and kidneys. Much of the involvement of organs is manifested by fibrotic changes in the smooth muscle coats, for example, in the muscularis interna of the esophagus and bowel, or about arterioles. Signs of nonsuppurative inflammation are often found in addition to sclerotic changes.

Such profound structural alterations in tissue inevitably give rise to disturbances in function of the organs and often to severe contractures of involved joints. Fibrotic tissue, by its very nature, undergoes shortening and thereby causes progression of contraction deformities and atrophic changes.

In view of the type and extent of involvement, it is not surprising that fully developed scleroderma causes profound disability and is associated with a high fatality rate. Treatment has necessarily been empiric and many and varied forms of therapy have been advocated. None has been uniformly successful and satisfactory. Nevertheless, it is believed that much can be accomplished if antifibrosis therapy is instituted early and available measures to prevent disabling contractures are fully utilized. The therapeutic program described is directed toward these ends. It has evolved from experience accumulated during the last decade in the management of 72 cases of scleroderma, together with information concerning 10 other patients who were treated in a similar manner. There was no selection of patients admitted to this series, each being placed on the program regardless of the severity of the disease. Some had previously undergone cervical sympathectomy; others had been treated with corticosteroids, ACTH, testosterone, Bistriate, and other substances without evident benefit. There were 14 males and 58 females in this series ranging in age from 3-1/3 to 75 years at the time of institution of therapy. The earliest onset was at the age of 10 months in a female child who also exhibited phenylpyruvic oligophrenia.

The program followed in the management of the patients in this series consisted of (1) systemic antifibrosis therapy through the long-term

administration of potassium para-aminobenzoate; (2) physiotherapy including dynamic traction splints where applicable; and (3) Urecholine for the alleviation of dysphagia.

Some 10 years ago, potassium para-aminobenzoate (Potaba, KPAB) was first observed to soften and reverse in varying degree the cutaneous changes of scleroderma. At that time, large doses of the drug were administered to a 40-year old man who exhibited features of both dermatomyositis and scleroderma. Striking improvement occurred in both components of his illness and this led to the further use of Potaba in the treatment of scleroderma.

For administration to patients, potassium para-aminobenzoate has been found to be preferable to the crystalline acid or the sodium salt. The potassium salt is less frequently associated with anorexia and nausea. Like other potassium compounds, KPAB is best given in liquid form. Patients generally prefer a chilled 10% aqueous solution of KPAB to other preparations. Capsules are often well tolerated, but tablets not infrequently cause abdominal cramps.

The case reports along with data in a Table clearly indicate that the long-term administration of Potaba in adequate dosage will produce moderate to marked improvement in the great majority of scleroderma patients. It is recognized that Potaba is not a complete treatment for scleroderma. In the highly active, rapidly progressive form of disease, Potaba may only retard the process.

Untoward reactions have been documented elsewhere. These consist mainly of gastrointestinal complaints, such as anorexia and nausea which will subside after omission of the drug for a day or so. Treatment may be resumed as soon as the patient is eating well. By interrupting therapy during periods of poor dietary intake, the development of hypoglycemia may be prevented. Scleroderma patients with dysphagia may also occasionally note a burning sensation after swallowing a dose of the medication. This is usually relieved by antacids or milk.

These effects are not considered to be true toxic reactions. Indeed, Potaba is remarkably free from toxicity in doses employed in these and related studies. A few instances of drug rash and fever have been encountered, especially in lupus erythematosus patients. Leukopenia may at times be encountered during KPAB therapy, but its significance is difficult to assess because there is often a return to normal values despite continued administration of the drug. In more than 500 patients treated in this and other studies, no agranulocytosis has been encountered.

The mechanism by which Potaba mediates its effects in scleroderma has not been elucidated. However, recent studies appear to bear directly on this point.

Attention is drawn to another major difficulty in the management of scleroderma, namely, pericapsular fibrosis and joint contractures which

ensue from this process.) In addition, it is shown that there is a similar involvement of the articulations of the thoracic cage; this may lead to rigidity of the thorax and embarrassment of ventilatory function. It is of the greatest importance that physiotherapeutic measures, including deep breathing exercises, should be started early and maintained indefinitely in patients with scleroderma. The supplemental use of dynamic traction splints has been particularly valuable in dealing with contractures of the hands.

Many scleroderma patients complain of dysphagia and show evidence of a deranged esophageal transport mechanism. Urecholine affords relief to these individuals.

It should be recognized that a chronic disease, such as scleroderma, will require chronic treatment. In the absence of specific therapy for this disease, any program of management which is followed should be safe for long-term use, should be practical, and should be economically feasible. It is believed that experience with the therapeutic regimen described indicates that it conforms to these requirements. (Zarafonetis, C. J. D., Treatment of Scleroderma: *Ann. Int. Med.*, 50: 343-364, February 1959)

Rehabilitation

Medical rehabilitation forms the fourth phase in the over all scheme of health and medical measures applicable to an individual or to a community; namely, the promotion of health, the prevention of disease, the treatment of disease, and medical rehabilitation. In the planning of health and medical services, emphasis should be placed upon the prevention of diseases and injuries which are liable to lead to permanent disabilities requiring rehabilitative measures.

Rehabilitation contributes to the achievement of health by:

1. Preventing the development of unnecessary disability during the treatment of illness as illustrated by the stiffness and wasting associated with immobilization, or the anxiety occasioned by lack of prompt reassurance about the medical, social, and vocational consequences of disease or injury.
2. Assisting those afflicted with unavoidable disability, such as congenital deformity, accidental loss of sight, or incurable disease, to achieve the fullest physical, mental, social, and vocational usefulness of which they are capable.

The rehabilitation process is a complex one, involving several disciplines and different techniques working together as a team in order to achieve the best end-results for the handicapped person. The team approach must be emphasized because no single discipline or technique could accomplish

the desired objective to the exclusion of the others. Thus, medical rehabilitation must come first to restore or resuscitate the remaining, diminished, or disturbed physiological and psychological functions of the handicapped person.

During or shortly following the medical rehabilitation, the educational, vocational, and social aspects of rehabilitation should be initiated. The entire process of rehabilitation should provide for a smooth and continuous operation from the onset of sickness or injury until rehabilitated.

Progress in medical science has led to the prevention of many diseases; however, it has created new problems in rehabilitation because severely disabled patients who formerly died now survive. At the same time, economic, industrial, and social progress has raised the educational and vocational standards which the disabled must attain if they are to hold their own with the able-bodied. Thus, in a highly developed society, many services may be concerned in the total rehabilitation of an individual patient, but unless there is close integration and teamwork the desired result will not be attained.

General Aims and Principles

The basic aim of medical rehabilitation is not only to restore the disabled person to his previous condition, but to develop his physical and mental functions to the maximum. More specifically, the aims of medical rehabilitation are not only "physical cure" but "social cure." For example, the individual must be restored to his former job, prepared for any full-time employment, prepared for part-time sheltered employment—in other words to self-reliance in daily life.

Regardless of the goal, attention should be directed to the large physical and mental resources upon which the disabled person can draw. The individual should be treated as a whole and not as an assortment of organs and extremities. Emphasis then should not be on the individual defects, but on the remaining assets and their reintegration into a total effective dynamic pattern.

The physical restoration of the sick, injured, or disabled person will depend on his constitution, the application of all accepted medical and surgical procedures, and the complementary or supplementary use of all physical measures.

Treatment should begin early to avoid the deleterious effect of prolonged immobility resulting in loss of muscle tone, atrophy, and metabolic deficiencies and psychological disturbances.

Principles of Therapeutic Application

Many illnesses normally proceed to rapid and complete cure with medical and nursing care alone, and in such cases no other services may be required. In certain acute illnesses and injuries, especially those which

might result in impairment, chronic diseases, or disabilities, the doctor needs the help and collaboration of a team of nurses, physical therapists, occupational therapists, prosthodontists, medical social workers, and other paramedical personnel.

Physical measures employed in the treatment of injury and disease have had long history. Traditionally, they consist in the use of such physical agents as heat, electricity, massage, water, and exercise. While all these agents have a place in physical restoration services, the greater emphasis in the past two decades has been on exercise in its various forms, such as group exercises and remedial games. Neurophysiological research has demonstrated the value of developing muscle power, range of motion of the joints, and coordination of muscles in group patterns rather than by single muscle treatment.

Physical therapy associated with occupational therapy aims at restoring impaired function through the use of craft and industrial activities, thereby developing the ability to carry out the needs of personal self-care, such as eating and dressing, as well as restoring the capacity to work. Therefore, consideration should be given to the development of those activities which would be applicable to the needs of independent living and capacity to work.

The whole range of prosthetic devices; namely, artificial limbs and eyes, sensory aids (hearing devices), and self-help devices (adapted equipment, crutches, braces, wheelchairs, and automobiles) is an important part of the armamentarium of rehabilitation services. All prosthetic appliances should be made to the patient's measurements and individually fitted. Artificial limbs, wherever prescribed, should be considered as a part of a coordinated program which includes:

1. Full psychological preparation and orientation of the patient
2. Adequate surgery
3. After-care of the stump
4. Prescription, fabrication, fitting, and servicing of prosthesis
5. Training in the use of prosthesis

Many rehabilitation services can be adequately carried out in hospitals and hospital departments. However, the greatest efficiency can be achieved by grouping these comprehensive services in a rehabilitation center. The rapid development of these centers throughout the world is evidence of the effective manner in which these needs are being met.

Needs

Rehabilitation services deal, broadly speaking, with three types of cases. The first type is the patient who, after a period of medical or surgical care with physiotherapy, remedial gymnastics, and other paramedical

procedures, can return to his normal work and normal life. The second type is the patient with a stable disability which is of such a degree or nature that it will permanently influence his life and will, therefore, demand that in addition to the specific rehabilitation services, the patient will also need educational, vocational, and social help. The third type is the patient whose disability is either progressive or liable to vary in degree and effect from time to time. This patient needs the kind of total service which is given to the second type of patient, although after his resettlement in work he may continue to need help from one or more of the services, either regularly or intermittently, for the rest of his life. To distinguish between type two and type three is not easy. The patient who has been rehabilitated and resettled in work different from that which he formerly did or who has had to return to his normal work and normal life with a handicap cannot be finally regarded as reestablished until he has had a substantial period during which to adjust to his new circumstances. Sometimes, such a patient may have persistent difficulty in adjusting and may, therefore, need the continuing help which is given to the type three patient.

It has been said that rehabilitation begins when the patient enters the hospital door and ends only when he is successfully and happily reestablished in society. The process which brings this about involves four main groups of services: medical, educational, vocational, and social. (Abstract: Expert Committee on Medical Rehabilitation, First Report, WHO, 1958) (OccMed-DispDiv, BuMed)

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Air Pollution - A Menace to Public Health

One of the consequences of the industrialization of Europe has been the uncontrolled discharge into the air of increasing quantities of smoke, particulate matter, and waste gases. Since World War II, anxiety has been growing about the grave danger to public health represented by this constant pollution of the atmosphere. The World Health Organization (WHO), Regional Committee for Europe, discussing this problem at its 1955 session, came to the conclusion that a combined effort by the countries of Europe was required for its solution.

As a first step towards implementing this recommendation, a Conference on Public Health Aspects of Air Pollution was convened by WHO in Milan, November 1957. Twenty-one European countries participated; the United States, the European Coal and Steel Community, and the Organization for European Economic Cooperation sent observers.

The organizers of the Conference set up two working groups, one to study the sanitary and engineering problems involved in prevention of air pollution, the other to consider the public health and administrative aspects.

These two groups submitted reports to the Conference and the problems requiring further investigation were summarized in plenary session.

"Air pollution is not only a difficult problem; it is for several countries a new problem." This statement in the final report of the Conference epitomizes the present situation.

Several countries gave striking examples of ill-effects on man, animals, and plants caused by air pollution. In Belgium, deaths from chronic bronchitis are higher in the industrial provinces of Liege, Namur, and Hainault than in other provinces. In the United Kingdom, it is estimated that in the Thames Valley smoke-polluted fog was responsible for 3500 to 4000 deaths in four days in December 1952, and that a similar but less severe incident in 1956 caused 1000 deaths in Greater London. The health of school children is reported to have been adversely affected in some districts of Poland where smelting and similar industries are concentrated. A shale-oil factory in Kvarntorp, Sweden, gives off roughly 12 tons of dust, 200 tons of sulfur dioxide, and 1200 cubic meters of hydrogen sulfide in 24 hours. Fatigue and discomfort as well as minor illnesses and respiratory symptoms, including bronchitis, have been found to be more common among people living near the factory than in the rest of the population. Harmful effects on plant life have also been observed in the neighborhood of this and other shale-oil factories, iron and copper works, phosphate factories, carbon bisulfide factories, sulfate cellulose plants, and electro-chemical factories.

Pollution from fluorine compounds had such serious effects on cattle in the Netherlands that some had to be slaughtered and in Germany animal losses have occurred in the neighborhood of factories releasing arsenic compounds and metallic dusts into the air. Animals and plants have suffered in the neighborhood of aluminum factories in Switzerland, while in Finland a sulfuric acid plant and some other factories have had to pay heavy compensation for damage to crops and material.

The Conference was in general agreement on the reality of the deleterious effects of air pollution on health, and that this is a wide field for further research into such questions as the relationship between air pollution and certain well known respiratory and infectious diseases, the occurrence of minor illness and discomfort following air pollution, and the positive value of fresh air in the maintenance of health.

The Conference recommended that all countries should make systematic measurements of air pollution and that the apparatus used should be standardized. While relatively simple procedures are of value in giving a general assessment of the degree of pollution in an area, well equipped centers with adequately trained staff are essential if a thorough study is to be made. It is important that those engaged in such work should have at their disposal information on the meteorological conditions at the time of measurement. The possible hazards of ionizing radiations in the air should be borne in mind and routine measurements made.

The Conference believed that, in spite of the present lack of basic knowledge about the nature, source, and allowable levels of pollutants, there is much that can be accomplished immediately. Public health personnel, sanitary and chemical engineers, industrialists and workers in related fields—meteorologists, town planners, and architects—must be brought together to find the most satisfactory solutions to air pollution.

The Conference was of the unanimous opinion that prevention is better than cure and that efforts should be concentrated on controlling pollution at the source. Identification, measurement, and control of a pollutant can be carried out most effectively at the point of production in the industrial plant or in the chimney stack before it reaches the outside air.

Not only industrial effluents, but also the exhaust gases of motor vehicles contribute largely to atmospheric pollution. A recent study in Paris showed that in the summer months the fumes given off by motor vehicles accounted for 70% of the total atmospheric pollution. Therefore, it was gratifying for the Conference to learn that some motorcar manufacturers are modifying their engine designs in order to lessen the amount of pollution caused. The use of devices such as catalysts, after-burners, and mechanical fuel regulators seems to offer considerable promise for the future. (Chronicle of the World Health Organization, 12: 14-16, January 1958)

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IN MEMORIAM

CAPT Thomas W. Bennett MC USN (Ret)	17 March 1959
CAPT Joseph G. Schnebly MC USN (Ret)	9 February 1959
CAPT Kenneth H. Vinnedge MC USN (Ret)	5 March 1959
CAPT William H. Whitmore MC USN (Ret)	30 January 1959
CDR John S. George DC USN (Ret)	11 February 1959
CDR Benton V. D. Scott MC USN (Ret)	16 February 1959
LCDR Ottice R. Scheile MSC USN (Ret)	10 February 1959
LT Donald A. J. Hammond MSC USN (Ret)	9 January 1959
LT James L. Okel MC USN	4 March 1959
CWO Ernest W. Herrmann HC USN (Ret)	12 February 1959
CWO2 Harry D. Slusher MSC USN (Ret)	4 January 1959

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Please forward requests for Change of Address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

From the Note Book

1. RADM B. W. Hogan, Surgeon General of the Navy, will attend the Medical Conference of the Surgeons General of the NATO countries at SHAPE Headquarters, Paris, France, 8 - 10 April 1959. Following the Conference, the Surgeon General plans to visit Naval Medical Activities in France, French Morocco, England, Spain, and Italy prior to his return to Washington. At the invitation of the Surgeon General of the Army, he will also visit U. S. Army Hospitals in Germany and Italy where Navy patients are hospitalized. (TIO, BuMed)
2. The Royal Norwegian Navy's Chief Psychologist, CDR Per Jorem, has begun a four-months' orientation and training visit to several continental U. S. Naval Activities. Approved by the Chief of Naval Operations and arranged by the Bureau of Medicine and Surgery, CDR Jorem's visit will last until early July and will take him through all phases of the U. S. Navy's preventive psychiatry program. Particular emphasis will be placed on those aspects of the program pertaining to the selection of personnel and the rehabilitation of disciplinary offenders. (TIO, BuMed)
3. The Navy received an Edinburgh International Film Festival certificate for a Bureau of Medicine and Surgery film, "Color Vision Deficiencies." The Edinburgh Festival is an annual event. The United States participates each year, sending an official delegate and representative films. Over a period of 15 years, the Navy has received about 34 national and international awards for its motion pictures. "Color Vision Deficiencies" (MN 8246) is a 20-minute, 16 mm. film with sound and color, made for the Navy in 1957 by Audio-Productions, 630 Ninth Avenue, New York 36, N. Y. It is intended for Medical Department personnel who are responsible for color vision tests. (TIO, BuMed)
4. A five-day conference for Chiefs of Nursing Service at continental U. S. Naval Hospitals has been approved by the Surgeon General for 4 - 8 May 1959. The conference will be held at the Bureau of Medicine and Surgery, Washington, D. C. "Administration of a Nursing Service for Improvement of Patient Care" is the theme of the meeting according to the Nursing Division of the Bureau. (TIO, BuMed)
5. A 6-day postgraduate course for physicians primarily interested in Internal Medicine will be given 11 - 16 May 1959 by the Department of Medicine, Johns Hopkins Hospital, and Johns Hopkins University School of Medicine, Baltimore, Md.

6. When a hospital is confronted with hospital-acquired staphylococcal infections, the extent of the problem should be determined by tabulating all infections related to hospitalization including those occurring in the immediate period following discharge of the patient. When an epidemic is present, all isolated coagulase-positive staphylococci should be bacteriophage-typed to find the prevalent strain and to trace its possible source. (Am. J. Med. Sci., February 1959; K. M. Schreck, M. D.)

7. Restoration of pulsatile blood flow in the lower leg is the objective of surgical treatment for segmental occlusive disease of the femoral artery. This objective has been reached in 86% of 317 patients treated by the bypass graft technique. (Surg. Gynec. & Obst., March 1959; G. C. Morris Jr., M. D., et al.)

8. A new concept of hypothermic analgesia for extracorporeal open heart surgery is presented. Except for a muscle relaxant, no other anesthetic adjunct was required to maintain surgical anesthesia during bypass. Fifteen cases are reported with only one mortality. The technique is described. (J. Thoracic Surg., February 1959; W. W. Musicant, M. D., et al.)

9. Observations in 12 patients suddenly developing psychiatric and neuromuscular symptoms have revealed evidence suggesting a relationship between these symptoms and a depletion of the total body magnesium. (Ann. Int. Med., February 1959; CAPT R. E. Randall, Jr., USAF (MC) et al.)

10. The importance of artificial pneumoperitoneum as a diagnostic aid for upper intra-abdominal masses outside the gastrointestinal tract is discussed. The procedure is simple and without untoward effects. (Radiology, February 1959; N. R. Canoy, M. D.)

11. A review is presented of 193 cardiovascular operations on cyanotic children. The mortality was 20%. In 164 operations on cyanotic children with potentially operable lesions, there were 19 deaths (11.6%). (J. Pediat., March 1959; R. Ash, M. D., et al.)

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Medical Intelligence Reports
(Med-3820-1)

The attention of all Medical officers, particularly those serving at sea or on foreign shore, is invited to the requirements of Article 23-124, Manual of the Medical Department. Compliance with this article is of great importance to the Navy Medical Department and the Navy as a whole.

(ProfDiv, BuMed)

Additional Personnel Assignments

The Surgeon General has approved establishment of the following positions in the Office of the Director, Medical Service Corps Division:

Code 35E - Assistant for Women's Specialists Section officers

Code 35F - Assistant for Podiatry officers

These officer assistants will provide the Division Director with professional advice and assistance in procurement, career management, and effective utilization of members in the respective Sections of the Medical Service Corps.

The positions will be filled by additional duty assignments of officers having primary duty in the Washington area. The first officers to be assigned are:

Code 35E - LCDR Elizabeth O'Malley MSC USN, Naval Hospital, Bethesda, Md.

Code 35F - LCDR William H. Woolf MSC USNR, Naval Dispensary, Washington, D. C.

Officers filling similar assignments are:

Code 35B - LCDR John E. Rasmussen MSC USN, BuMed
Assistant for Allied Sciences Section officers

Code 35C - CDR Robert L. Henry MSC USN, BuMed
Assistant for Optometry Section officers

Code 35D - LCDR Solomon C. Pflag MSC USN, BuMed
Assistant for Pharmacy Section officers

(MSC DIV BUMED)

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American Board of Obstetrics and Gynecology

"Office of the Secretary:

Robert L. Faulkner, M.D.

2105 Adelbert Road

Cleveland 6, Ohio

The next scheduled examinations (Part II), oral and clinical for all candidates will be conducted at the Edgewater Beach Hotel, Chicago, Ill., by the entire Board from May 8 through 19, 1959. Formal notice of the exact time of each candidate's examination will be sent him in advance of the examination dates.

Candidates who participated in the Part I Examination will be notified of their eligibility for the Part II Examinations as soon as possible.

The deadline date for the receipt of new and reopened applications for the 1960 examinations is August the first, 1959. Candidates may submit their applications at any time before that date and are urged to do so."

Trudeau School of Tuberculosis and
Other Pulmonary Diseases

The Trudeau School of Tuberculosis and Other Pulmonary Diseases which will hold its Forty-Fourth Session, June 8 to 26, 1959, continues to provide an unique opportunity for training in the field of chest diseases. This annual postgraduate course, conducted under the auspices of the Trudeau Foundation and supported by the Hyde Foundation, is able to provide outstanding instruction at a minimal tuition of \$100 for a three weeks' session. Attendance at the Trudeau School carries with it some distinction as well as a thorough review for specialization in pulmonary diseases or for work in public health involving tuberculosis.

Medical Corps officers with a background of Internal Medicine who are interested in attending the session should apply by submitting a written request to the Bureau of Medicine and Surgery to arrive prior to 8 May 1959; Successful candidates will be provided TAD and Per Diem orders plus reimbursement of the \$100 tuition fee. (ProfDiv, BuMed)

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BUMED INSTRUCTION 6250.7

12 March 1959

From: Chief, Bureau of Medicine and Surgery
To: Commanders in Chief; Fleet and Naval Force Commanders; Special Force and Type Commands; Administrative Commands and Units; Flotilla, Squadron, and Division Commanders-Ships; Warships, Minecraft, Amphibious, and Auxiliary Type Ships; Patrol Type Ships; Floating Drydocks; Service Craft; and Military Sea Transportation Service Commands

Subj: Procurement of deratting or deratting exemption certificates by U. S. Naval vessels entering foreign ports

Ref: (a) Art. 22-32, ManMed
(b) Art. 22-37, ManMed
(c) GO No. 20

This instruction promulgates information regarding a procedure by which naval ships operating for periods exceeding 6 months in areas without available representatives of the United States Public Health Service may procure a deratting or deratting exemption certificate, and by which naval officers may issue such certificates in other areas.

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DENTAL

SECTION

Silver Amalgam

This article on silver amalgam discusses various factors that contribute to the success or failure of amalgam dental restorations. Particularly impressive is the observation that approximately 56% of all amalgam failures are due to improper cavity preparation, and that approximately 40% result from contamination or faulty manipulation at the time of insertion.

Points brought out in regard to the use of silver amalgam in restorative dentistry are:

Cavity Preparation. Improper cavity preparation contributes to recurrent caries and/or fracture and ultimately to amalgam failure. Common faults in cavity preparation include inadequate extension of cavity margins to immune areas, lack of provision for bulk of amalgam, inadequate retentive form, and improper cavosurface margins.

Dimensional Change. According to ADA specifications, amalgam should expand between 3 and 13 microns 24 hours after its insertion. Slight deviations are not significant, but changes of greater magnitude can lead to adverse results.

Compressive Strength. Present ADA specifications for amalgam include a compressive strength requirement of 35,000 lbs. per square inch after 24 hours. During the first hour, only about 10 to 15% of the eventual maximum strength is attained. It is important, therefore, to instruct the patient to avoid excessive biting forces or to restrict himself to a liquid diet during the first few hours.

Flow. The strength and flow of amalgam are closely related. Flow applies to the ability of a material to retain its shape under a constant load. Amalgam restorations with high flow values are thought to be more susceptible to failures, such as flattened contact points, overhanging margins, and slight protrusion from the cavity preparation. Undertrituration may raise the flow value to as high as 8%, twice the maximum permitted by the specification. Flow is increased also when condensation pressure is inadequate.

Alloy-Mercury Proportion. If excess mercury is used in the original mix, a higher percentage of mercury will be present in the final restoration, regardless of the pressure or technique used during condensation. Fifty percent residual mercury content is acceptable, however; above 55%, there is a dramatic drop in strength. Once the alloy-mercury ratio is established, additional mercury should never be added.

Trituration. Trituration reduces grain size and removes superficial tarnish on each alloy particle. This permits ready attack of the alloy by the mercury. Inadequate trituration results in weak restorations subject to fracture and fraying of the margins. Proper trituration results in increased strength, smoother surface, and lower tendency to tarnish. Although increased mixing time decreases expansion, this is not clinically significant. Inferior properties resulting from underamalgamation are the real danger.

Mulling and Moisture Contamination Mulling does not injure the amalgam, but should be done in a rubber dam to prevent moisture contamination. Zinc in the alloy reacts with moisture from the palm or from the cavity to liberate hydrogen gas. This produces pressure within the restoration and causes protrusion from the cavity, marked reduction in strength, and possible pain. The use of the rubber dam is recommended to minimize the chance of contamination.

Condensation. A common cause of marginal failure and recurrent caries is improper condensation of the amalgam. Increments which are either too wet or too dry should not be used. To prevent a laminating effect, it should be possible to work mercury to the surface throughout the packing procedure. Small rather than large increments permit better adaptation. Amalgam which stands too long before condensation retains a greater amount of mercury and suffers reduction in strength. Several mixes must be employed for larger restorations.

Carving. The amalgam can be carved within two minutes after packing, but the margins should not be burnished at this time. Burnishing draws excess mercury to an area, weakening it and making it susceptible to tarnish and corrosion.

Polishing. Proper polish not only improves the appearance and the marginal adaptation of the restorative, but minimizes clinical tarnish. Polishing should not be undertaken within 24 hours, and preferably not for several days. There should be no overhangs, and contact areas should be rounded. A bevel-type finishing bur is advantageous to prepare the occlusal surface for polishing. Final finishing is accomplished with amalgam brushes. Whiting and tin oxide produce the final high luster. There should be no excessive heat to draw mercury to the surface during polishing. (Amalgam: Dental Clinics of North America, November 1958)

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Articles by Navy Dental Officers Abstracted
in ADA Journal

Of eight articles abstracted in the March 1959 issue of the Journal of the American Dental Association, five were prepared and submitted by

Navy Dental Corps officers. All of the articles appeared originally in the Journal of Oral Surgery, Anesthesia, and Hospital Dental Service. The authors and articles are:

CAPT Walter W. Crowe DC USN Treatment of Zygomatic Fracture Dislocations

CAPT Theodore A. Lesney DC USN..... Cervicofacial Actinomycosis: and

CDR Kimble A. Traeger DC USN

A Postextraction Complication

CAPT John P. Jarabak DC USN Use of the Foley Catheter in Supporting Zygomatic Fractures

CAPT Raymond F. Huebsch DC USN..... Clinical and Histological Study of Alveolar Ostitis

CAPT Louis S. Hansen DC USN..... Diagnosis of Oral Keratotic Lesions

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Dental Interns for Fiscal Year 1960

Eighteen Ensigns (1925) Dental who are scheduled to graduate from dental school in June 1959 have been selected for participation in the Navy Dental Intern Program for the period July 1, 1959 to June 30, 1960. These Ensigns will be appointed as Regular Navy Dental Corps officers upon acceptance of this year of training. Those selected are:

Brown, Allen Kenneth	University of Washington
Charlick, Richard Edwin	University of Michigan
Connole, Peter William	Marquette University
Crawford, Benton Earl	Baylor University
Daughtry, Max Berry	Emory University
Gourley, James Vincent	University of Washington
Hack, Maurice Charles, Jr.	Loyola University (Chicago)
Hanley, John Henry	Temple University
Hancock, Edwin Joe	State University of Iowa
Hart, Gerald Lee	University of Michigan
Johnson, James Irving	Marquette University
Koch, Robert Wayne	Washington University (St. Louis)
Nash, Larry Lee	State University of Iowa
Preece, Richard Golden	Washington University (St. Louis)
Smith, David Joseph	State University of Iowa

Tennyson, Lloyd Roger
Weigel, Eugene John Jr.
Williams, John Peter

University of California
Western Reserve University
New York University

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RESERVE SECTION

Annual Meeting of the AMA

The American Medical Association will hold its annual meeting in Atlantic City, N. J., 8 - 12 June 1959. The Section on Military Medicine will have three daily sessions during the afternoons of the 9th, 10th, and 11th in Room A of the Convention Hall.

The Chief of Naval Personnel has authorized retirement point credit for eligible Naval Reserve Medical Corps officers who attend these sessions, provided they register with the military representative present.

The Section on Military Medicine will provide a discussion of the Military Disability Retirement problems for Regular and Reserve officers. In addition, there will be a presentation by the Honorable Frank B. Berry, M. D., Assistant Secretary of Defense (Health and Medical). Also other prominent authorities will participate in presenting the following subjects:

First Session

Medical Problems in the Jet and Space Age
Medical Investigation of Pan-American World Airways
Crash on 8 November 1957
Medicare

Second Session

Communication - A New Challenge
Strike
Act I - Reveille—Before and a few hours after
Act II - Fatigue—The next few days
Act III - Taps—Much later

Third Session

Some Aspects of Air Force Biodynamics Research
Practice of Medicine in the Antarctic

American Optometric Association -
Annual Meeting

The American Optometric Association will conduct its 62nd Annual Congress at the Statler-Hilton Hotel, Dallas, Texas, 28 June - 1 July 1959.

Planned for presentation are four daily sessions of the Military Optometry Section which will be devoted to military optometry under the chairmanship of officers of the Military Services.

Attendance at these sessions affords an excellent opportunity for inactive Reserve Optometrists to be brought up to date on the latest developments of Military Optometry.

The Chief of Naval Personnel has authorized retirement point credit to eligible Naval Reservists who attend provided they register with the military representative present.

The subjects to be presented at the Section on Military Optometry are:

First Day

Factors in Developing a Minimum Optometric Examination
Routine in the Military

Second Day

Malpractice Implications for the Military Optometrist

Advantages of AOA Membership for the Military Optometrist

Third Day

The Development of Binocularity

Fourth Day

Medical Service Corps Trends

Report of Contact Lens Research

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Notify Your Commandant of Change
of Mailing Address

When you move or change your mailing address, you are required to notify the holder of your official naval records of your new address. Report address changes as follows:

Officers: To commandant holding your records. If affiliated with a pay unit, submit report via your unit CO.

Enlisted: To your CO, when affiliated with a pay unit. To commandant holding your records if you are not a member of a drill pay unit.

A temporary change of residence of six months or less does not require a transfer of records. However, if you have a temporary residence but mail cannot be delivered promptly, you should notify the holder of your records of your temporary address at the beginning and end of your temporary residence.

In the event of your death, your next of kin should notify the District Commandant of the fact.

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PREVENTIVE MEDICINE SECTION

Mosquito-Borne Encephalitis

During the past 25 years, severe epidemics of western encephalitis (WE) and St. Louis encephalitis (SLE) have occurred throughout western and central United States, but to date no major human outbreaks of eastern encephalitis (EE) have been recorded.

Because of grossly inaccurate and incomplete reporting, the actual incidence of "infectious encephalitis" is unknown, but this disease is being recognized as an increasingly serious health problem in the United States.

Information accumulated regarding the natural history of the WE, SLE, and EE viruses indicates that wild birds, particularly small species and nestlings, are the principal reservoirs of infection and mosquitoes the vectors. The basic infection cycle normally is limited to birds and mosquitoes with humans and horses as incidental entries.

Primary vectors of encephalitis include *Culex tarsalis* for both WE and rural SLE in the west and the *Culex pipiens* complex for urban SLE in central United States. Definite knowledge regarding the vectors of EE is lacking, but current evidence implicates *Culiseta melanura* for maintaining the basic infection chain in nature (bird-mosquito-bird) and possibly *Aedes*, *Psorophora*, and *Mansonia* mosquitoes for transmitting the disease to horses and humans.

Epidemics appear to be due to a fortuitous set of ecologic conditions, including high prevailing temperatures, heavy mosquito populations, and high rates of virus infections among nestling and adult birds.

At present, prevention of encephalitis consists of two principal approaches, immunization and mosquito control. Vaccination is recommended

as a prophylaxis for equines, but human immunization is not considered economically feasible; furthermore, suitable vaccines for human use are not now available.

Employment of measures to minimize vector mosquito production in areas where encephalitis may be endemic or epidemic appears to be the most practical approach to prevention. Present knowledge indicates that control efforts should be focused on *C. tarsalis*, *C. pipiensquinquefasciatus*, and *C. melanura*. An alternative possibility which needs further study would be the control of avian reservoirs of the viruses.

Because of the lack of specific therapeutic treatment and lack of suitable human vaccines, coupled with the apparent widespread infection among birds and mosquitoes, the encephalitis viruses have a high epidemic potential. Hence, it behooves all public health workers to keep well informed on the epidemiology of this group of diseases and to maintain continuous vigilance. It is hoped that the intensive investigations now under way will provide a practical answer for adequate protection against the mosquito-borne encephalitis infections. (Beadle, L. D., M. A., Status of Mosquito-Borne Encephalitis in the United States: *Pub. Health Rep.*, 74: 84-90, January 1959)

Susceptibility of Garter Snakes to Western Equine Encephalomyelitis Virus

In temperate zones, the importance of a mosquito-bird-mosquito cycle for disseminating western equine encephalomyelitis (WEE) virus in summer is well established. A major problem, however, in a study of the ecology of WEE virus is the overwintering mechanism. One such mechanism suggested has been a continuing bird-mosquito-bird cycle in warmer climates with seasonal invasion of colder climates through migrating birds. Chronic latent infection of 1 to 10 months' duration occasionally occurs in wild birds experimentally infected with WEE virus which may account for maintenance of virus during winter months. However, the WEE virus was not isolated from the blood of 764 birds wintering in southern United States, or from 739 birds entering the same area on their spring migration. The relative paucity of evidence that birds served as a winter reservoir of virus or reintroduced it into northern areas each year suggested a consideration of hibernating animals. With regard to mosquitoes themselves, evidence is mounting that they are relatively unimportant as a winter reservoir of infection. Hibernating vertebrates were considered because on theory of latent infection, such species, if susceptible, might serve to maintain virus during winter months and to disperse it when vectors become active. Field studies showed that *Culex tarsalis*, the mosquito vector, overwinters in rock piles and that many snakes also hibernate in these sites. Laboratory investigations revealed that *C. tarsalis*

feeds on garter snakes in absence of other hosts, and blood engorged *C. tarsalis* were collected in snake-baited traps. This preliminary report presents data showing that garter snakes can be infected readily either by bites of infected *C. tarsalis* or by intraperitoneal inoculation of a recently isolated mosquito strain of WEE virus.

Three snakes were fed upon by 2, 9, and 20 infected mosquitoes, respectively. Viremia of 4 to 20 days' duration was observed. In one snake, virus was detected in a 10^{-6} dilution of whole blood which was the highest dilution tested. This quantity of virus in a host is sufficient to infect mosquitoes.

Four snakes were injected intraperitoneally with a suspension containing 10^4 or 10^6 LD₅₀ of virus as determined by titration of the suspension in suckling mice. Virus was detected in blood of each snake. The titer of virus in one snake was at least 10^{-7} , the highest dilution tested. Virus persisted in one snake for 36 days, at which time the snake died.

Virus isolated from blood of five snakes was identified as WEE virus by neutralization test; isolates from two other snakes were presumed to be WEE virus because of the characteristic death pattern of suckling mice. Antibody titrations in snakes surviving were not carried out.

This is the first evidence, to the authors' knowledge, that a virus which is an important parasite of avian and mammalian hosts can infect a cold-blooded vertebrate and cause viremia of high titer and long duration. The possibility that snakes may play a role in overwintering of the virus is being investigated. (Thomas, L. A., et al., Susceptibility of Garter Snakes (*Thamnophis Spp.*) to Western Equine Encephalomyelitis Virus: Proc. Soc. Exper. Biol. Med., 99: 698-700, December 1958)

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Probable Biological Control of Schistosomiasis Mansoni

The status of schistosomiasis has been studied intermittently in the Los Pena community of the Quebrada San Anton watershed, east of Rio Piedras, Puerto Rico. The suburban valley of Los Pena has an area of 10.3 square miles and has 19 tributaries of the main stream Quebrada San Anton as well as others adjacent. The terrain consists of rolling hills which gradually become an alluvial plain before ending at the Laguna San Jose. The principal stream is normally not more than 10 feet wide and only occasional pools are more than 6 feet deep. All tributaries are narrow and shallow.

The first studies comprised clinical observations on acute and chronic cases and determinations of population density and infection rates in the snail intermediate host of *Schistosoma mansoni*, *Australorbis glabratus*. In 1947, the Los Pena area was used as a test area in which all available

methods of schistosomiasis control were utilized. Treatment with stibophen and other antimonials was administered, water supply was improved, a latrine was installed at every home, and health education was greatly stressed. This study covered a period of 6 years (1947-53). The prevalence of *S. mansoni* dropped from 44.6% in 1947 to 4.5% 2 years later. This case rate decline is an example of the efficacy of stressed health education, therapy, and other control measures, but it is also an example of the temporary effect of such measures because the infection rate had increased to 29.2% by 1953 when the control program ceased.

In 1950, sodium pentachlorophenate was tested in a section of the main stream adjacent to the housing area. The chemical was very effective in killing *A. glabratu*s in the area treated and for about 1.5 miles downstream, but snails returned 6 to 8 months later.

In 1952, the large tropical South American ampullarid *Marisa cornuarietis* was first seen in the Los Pena section of the stream. By March 1956, this snail had advanced upstream for about 1 mile to a small dam only 18 inches high which temporarily stopped further migration. A gradual decrease in *Australorbis* has been observed in all stream sections where *Marisa* has become established. However, infected *Australorbis* continued to be found in these reduced colonies during the interim 1952 to 1956, from the main stream or tributaries, ranging up to 8% positive. During 1956, infected *Australorbis* were known to be in only one tributary in the stream system. No infected snails have been found since 1956. This finding was based on the first snail survey of the entire watershed stream system completed in March 1956, and repeated bimonthly since then. *Australorbis* was found to be absent from the 1.5-mile long section of the main stream having the greatest numbers of *Marisa* which section includes the Los Pena community. However, the two species were observed living in average numbers (5 to 20 per square yard) in some tributaries.

Watershed populations of *Australorbis* continued to decline as *Marisa* increased up to October 1957, when only small numbers of the host species persisted at three places. The effect of *Marisa* on *Australorbis* has been studied in the laboratory where it was found that the former snail is a voracious feeder on vegetation and that it ate *Australorbis* eggs and reduced numbers of young snails. The number of snails per volume of water was shown to be an important factor.

Beginning in March 1956, *Marisa* has been planted in lots of 200 large specimens at all upstream and downstream sections as well as paralotic swamps and isolated oxbows. Replantings were made as necessary through October 1957. During a period of one and one-half years, it has almost eliminated the host species in these areas.

Two recent successive annual surveys of the same creekside families indicate that no new schistosomiasis infections are appearing in the statistically sensitive preschool age group. The community prevalence in all ages

and both sexes has levelled off at a rate of about 6 or 7%. This first instance of probable biological control of schistosomiasis transmission should be repeated in other endemic environments which are capable of supporting the remarkable snail Marisa. This field test is a step toward the solution of certain control problems in Puerto Rican schistosomiasis on a permanent and economically feasible basis. (Oliver-Gonzalez, J., Ferguson, F. F., Probable Biological Control of Schistosomiasis Mansoni in a Puerto Rican Water-shed: Am. J. Trop. M. Hyg., 8: 56-59, January 1959)

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Artificial Respiration Without Adjunct Equipment

(The following memorandum from the National Research Council, National Academy of Sciences, dated 16 February 1959, is reproduced for the information of the Service.)

"There is enclosed for your information a copy of a 'Statement on Emergency Artificial Respiration Without Adjunct Equipment' which has been approved by the Division of Medical Sciences of the Academy-Research Council.

This statement simply endorses the use of the mouth-to-mouth method of producing artificial respiration as the most practical method for widespread use.

It should be emphasized that this statement does not consider the relative values of various types of adjunct equipment or details of techniques and teaching methods. It is concerned primarily with a situation in which there is an urgent need to provide artificial respiration by the first person on the scene. The points presented in the statement would need considerable expansion to cover the many details of techniques to be used and the problems associated with teaching."

Statement on Emergency Artificial Respiration Without Adjunct Equipment

"The National Academy of Sciences-National Research Council Ad Hoc Committee on Artificial Respiration in its meeting of 3 November 1958 reviewed the data on artificial respiration obtained through research projects supported by the Department of the Army, the American National Red Cross, and others.

It was unanimously agreed by members of the Ad Hoc group that the mouth-to-mouth (or mouth-to-nose) technique of artificial respiration is the most practical method for emergency ventilation of an apneic individual, of any age, in the absence of equipment or of help from a second person, regardless of the cause of apnea. This method has the advantage of

providing pressure to inflate the victim's lungs immediately and allowing the rescuer to gain some information on the pressure, volume and duration of each blowing effort. For adults, a rate of about twelve breaths per minute of twice the normal volume was recommended; for children relatively shallow breaths appropriate for their size at a rate of about twenty per minute. For infants, only shallow puffs should be used.

The most important single factor contributing to the rescuer's success by any method is the immediate introduction of air into the victim's lungs. This can be accomplished only through an open airway. Mouth-to-mouth artificial respiration should be started at the earliest possible moment. The victim should be placed in a supine position with his head tilted backward and the lower jaw displaced forward. These two maneuvers relieve obstruction of the airway by the tongue by moving the tongue away from the back of the throat.

If obstructing foreign material is obviously present, such as food particles, secretions, false teeth, blood or blood clots, or chewing gum, it must be removed immediately with the fingers or by any other means possible. The first blowing effort will determine whether or not obstruction exists and, in the absence of obstruction, will provide the urgently needed oxygen.

If aspiration of a foreign body is suspected in an adult after failure of mouth-to-mouth ventilation to move air into the lungs, the victim should be placed on his side and a sharp blow administered between the shoulders to jar the obstructing material free. Again, the rescuer's fingers should sweep through the victim's mouth to remove such material.

An asphyxiated small child suspected of having a foreign body in the airway should be suspended momentarily by the ankles, or inverted over one arm and given two or three sharp pats between the shoulder blades in the hope of dislodging obstructing material.

Three important points should be stressed in the teaching of mouth-to-mouth methods: (1) Tilt the head backward and displace the lower jaw forward to clear the airway; (2) Prevent air leakage; (3) Blow vigorously into adults, but gently into children.

To avoid over-distension, the lungs should not be inflated beyond the point where the rescuer sees the victim's chest or abdomen expand.

Those rescuers who, for any reason, cannot or will not use the mouth-to-mouth technique should use a manual method. The Committee believes that there are not sufficient data available to recommend any single manual method as the best for all circumstances. Of the several manual methods available, some are more effective than others under different circumstances, and they vary in the amount of fatiguing strain placed upon the operator. The rescuer should not be limited to the use of a single manual method for all cases because the nature of the injuries in any given case may prevent the use of one method while favoring another.

The supine chest pressure-arm lift method (Silvester), with an improvised support under the shoulders, provides a slightly increased tidal volume when compared to prone push-pull methods, but in the supine position there is danger of aspiration of vomitus, blood, or blood clots. This hazard can be reduced by keeping the head extended and turned to one side. If possible, the head should be a little lower than the trunk.

The prone pressure, arm lift, hands under the face method (Holger-Nielsen) also presents a hazard of airway obstruction unless great care is taken to keep the head extended. The claimed advantage of prone methods over the supine methods of providing more efficient gravity drainage is minimal, and the prone method has the disadvantage, well recognized by anesthetists, of producing some restriction of breathing.

When manual methods are being used and a second rescuer becomes available, his efforts should be directed towards maintaining an open airway by holding the head and neck properly, maintaining forward displacement of the jaw, and keeping the pharynx free of vomit or mucus.

Regardless of the method used, the preservation of an open airway is essential. This can best be done by assuring continued extension of the head and neck and forward displacement of the lower jaw. Some unconscious victims will be saved simply by the establishment of an open airway permitting spontaneous breathing."

NOTE: The following references are recommended for details of techniques to be used and the methods of teaching artificial respiration:

Armed Forces Medical Journal, June 1957
Medical Technicians Bulletin, May-June 1957
Syllabus of Lesson Plans for First-Aid Instructors,
NavMed P-5056
First Aid, American National Red Cross, Fourth Edition

Films are available for scheduled loan from the Research Film Section, Walter Reed Army Institute of Research, Washington 12, D. C. Attention: M. Sgt. H. E. Dixon. (Two additional films intended for technical personnel will be available in the near future.)

Respiration Resuscitation Techniques - 40 minutes. For use by technical personnel. Compares all methods of resuscitation, including the mouth-to-mouth and mouth-to-airway techniques.

Mouth-to-Mouth Rescue Breathing - 10 minutes. For use by aid personnel, first-aid groups, and schools. Technique only.

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Navy's Motor Vehicle Traffic Safety Course

CMSW Ralph T. Goerner, Jr., USN, Head, Safety Section, Health Practices Branch, Preventive Medicine Division, Bureau of Medicine and Surgery, attended the first Navy course in Motor Vehicle and Traffic Safety conducted for the Navy by the Traffic Institute, Northwestern University, Evanston, Ill., February 2 - 20, 1959. The following subjects were presented:

Accident Causes, Investigation, Reconstruction, and Analysis	Traffic Law Enforcement - Police and Courts
Use of Accident Record Data	Chemical Tests for Intoxication
Motor Vehicle Administration	Principles of Coordination of Safety Program
Traffic Engineering	General Semantics
Driver Improvement through Education	Military Traffic Safety Program

The Traffic Institute has valuable data and techniques to offer, and the course in Motor Vehicle and Traffic Safety is highly recommended for officer personnel assigned to Security Officer billets and for civilian transportation supervisors and safety workers. Army and Air Force personnel attended the Institute and both Services feel that this course has contributed a great deal to their decreased accident rate.

The second Navy Course is scheduled for November 30 - December 18, 1959. (Safety Section, Health Practices Branch, PrevMedDiv, BuMed)

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